



Evaluation of the Off-Line Electronic Benefits Transfer Demonstration

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Summary of Findings

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The Evaluation of the Off-line Electronic Benefits Transfer Demonstration is presented in three volumes and a Summary of Findings. Volume I provides an analysis of the economic impact of the system on food stamp operations. Volume II describes the costs and other impacts of the system on recipients, retailers, and financial institutions. Volume III describes the design, development and implementation process.

For more information on this summary report or the complete reports on which it is based, write to the Office of Analysis and Evaluation, Food and Nutrition Service, U.S. Department of Agriculture, 3101 Park Center Drive, Alexandria, VA 22302

BACKGROUND



The Food Stamp Program is a federally sponsored nutrition program that is administered through state and local welfare agencies. Each month, over 10 million households receive nearly \$2 billion in benefits in the form of paper food coupons. These coupons, distributed in \$1, \$5, and \$10 denominations, are used to purchase eligible food items at over 200,000 authorized retailers. After being redeemed and processed through the banking system, the coupons are destroyed by the Federal Reserve. Since 1980, the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture has aggressively sought ways to reduce the administrative burdens and costs associated with printing, distributing, processing and reconciling coupons. Electronic benefits transfer (EBT) is a paperless food coupon delivery method. FNS recognized the opportunity to reduce paper, improve service to recipients, and reduce program fraud and abuse.

EBT provides benefit access through point-of-sale (POS) and card access technologies not unlike those commonly used for debit card purchases. FNS has been a strong proponent of EBT and has sponsored a comprehensive research program to systematically test its cost effectiveness, feasibility, and impact on participants including recipients, food retailers, and financial institutions. The first demonstration, conducted in Reading, Pennsylvania, indicated that while participants preferred EBT to food coupon benefit delivery, EBT was more costly. To determine whether EBT could be cost effective, FNS entered into cooperative agreements with state and local agencies to conduct additional EBT demonstrations. The resulting state-initiated demonstrations in New Mexico and Ramsey County, Minnesota were larger in scale than the Reading project and included cash assistance programs, as well as the Food Stamp Program. Given these economies of scope and scale, the state-initiated demonstrations indicated that EBT can be more cost-effective than paper. In addition, the New Mexico project demonstrated for the first time that EBT could be cost effective if piggybacked on the commercial infrastructure.

Each of these demonstrations utilized *on-line* technology in which recipients are provided magnetic stripe cards containing basic identifying information. To perform transactions, these cards are used in POS terminals that communicate with a central database where recipient account balances are maintained. Each day, participating retailers are credited for the net value of purchases and other transactions performed in their stores. Alternatively, with *off-line* technology, recipients are issued "smart cards" (cards containing a microcomputer chip with processing and memory capabilities) which maintain benefit

balance, transaction history and other information in addition to the basic identifying information common to on-line technology. These cards are used in POS terminals that do not require a separate communication with a central database to authorize each transaction. Instead, the identity of the user and the value of the transaction are validated against the data maintained in the card. Similar to on-line systems, participating retailers are credited daily for the net value of their transactions.

On-line and off-line EBT systems appear to function in virtually the same way from the recipient's point of view. The recipient takes their food items to the checkout counter at an authorized food retailer, they place their card in the card reading device, enter their personal identification number (PIN), and approve the purchase amount. The system verifies that there are sufficient funds available to complete the purchase, verifies the PIN, and approves or denies the transaction.

Hoping to find ways of further improving service and reduce costs, FNS authorized the demonstration of this new technology. While widely adapted in some European countries, smart card technology is relatively new and untested in the United States. Thus, this demonstration was designed as a proactive step to examine technical, policy, and economic issues associated with this evolving technology. In September 1990, FNS awarded a contract to the National Processing Company (NPC) in cooperation with the State of Ohio and Montgomery County, Ohio, to develop and operate an off-line EBT demonstration system for the delivery of food stamp benefits to clients in an area comprising six-zip codes in Montgomery County (Dayton).

THE OFF-LINE EVALUATION

The evaluation compared the impacts of the off-line EBT system to the paper coupon system it replaced and to the state-initiated, on-line demonstrations. The primary evaluation objectives were:

- ✓ *Estimate and compare the costs of the off-line EBT system to the preceding coupon system and to on-line EBT systems and explore the feasibility of continuing or expanding the off-line EBT system.* This analysis is presented in Volume 1.
- ✓ *Describe and compare the impact of the off-line system on each group participating in the demonstration.* This analysis is presented in Volume 2.
- ✓ *Describe the design, development, implementation, and operation of the off-line EBT system.* This description is provided in Volume 3.

RESEARCH APPROACH

The evaluation's basic research design is a pre/post comparison of the coupon and off-line EBT issuance systems. For both the coupon and EBT systems, project staff collected data on: the administrative cost of issuing food stamp benefits; levels of

higher under EBT, costs associated with benefit loss and diversion were lower under EBT. The off-line EBT system resulted in a \$2.98 per case month reduction in loss and diversion compared to the coupon system.

Recipients incur costs to participate in the the Food Stamp Program, and those cost reduce the effective value of the benefits received. Costs include direct out-of-pocket expenses, the value of recipient's time spent to obtain benefit or resolve problems, and the opportunity costs of benefits delayed, lost or stolen. The off-line EBT system resulted in a \$10.87 per case month decline in recipient's cost to participate.

Exhibit 1

Summary of Off-line EBT Evaluation Results

	Coupon	EBT	Difference
Administrative Cost per Case Month	\$2.89	\$8.21	\$5.32
Benefit Loss & Diversion per Case Month	4.06	1.08	(2.98)
Recipient Cost per Case Month	13.39	2.52	(10.87)
Retailer Cost per \$1,000 Sales	24.73	15.21	(9.52)
Financial Institution Cost per \$1,000 Redeemed	3.50	(0.23)	(3.73)

EBT significantly changes the operations of retailers who participate in the Food Stamp Program. Due primarily to the reduction in time required for coupon handling and reconciliation, on average retailer costs decreased by \$9.52 per \$1,000 in benefits redeemed. The decrease in costs held true for all four categories (supermarkets, grocery stores, convenience stores, and other stores).

Financial Institutions (FIs) play a crucial role in redeeming food stamp benefits and crediting the accounts of retailers that participate in the program. FIs welcome the transition from paper to electronic benefit delivery, which is in keeping with the banking industry's preference for electronic funds transfer. On average,

the participating FIs realized a profit of \$0.23 per \$1,000 redeemed compared to a cost of \$3.50 per \$1,000 redeemed under the coupon system.

To measure overall cost-effectiveness, retailer and financial institution costs were converted to a cost per case month basis and combined with per case month costs for program administration and recipient participation. The results indicate that the bottom line impact of EBT for all system participants is a decrease of \$7.98 per case month.

Off-line EBT Administrative Costs are Higher than Coupon and On-line EBT Costs

A primary objective of the evaluation of the off-line EBT demonstration was to estimate and compare the costs of the off-line EBT system to the paper food coupon system it replaced and to on-line EBT alternatives.

Exhibit 2

The costs of the off-line EBT demonstration were higher than either the paper food coupon system or the on-line alternatives

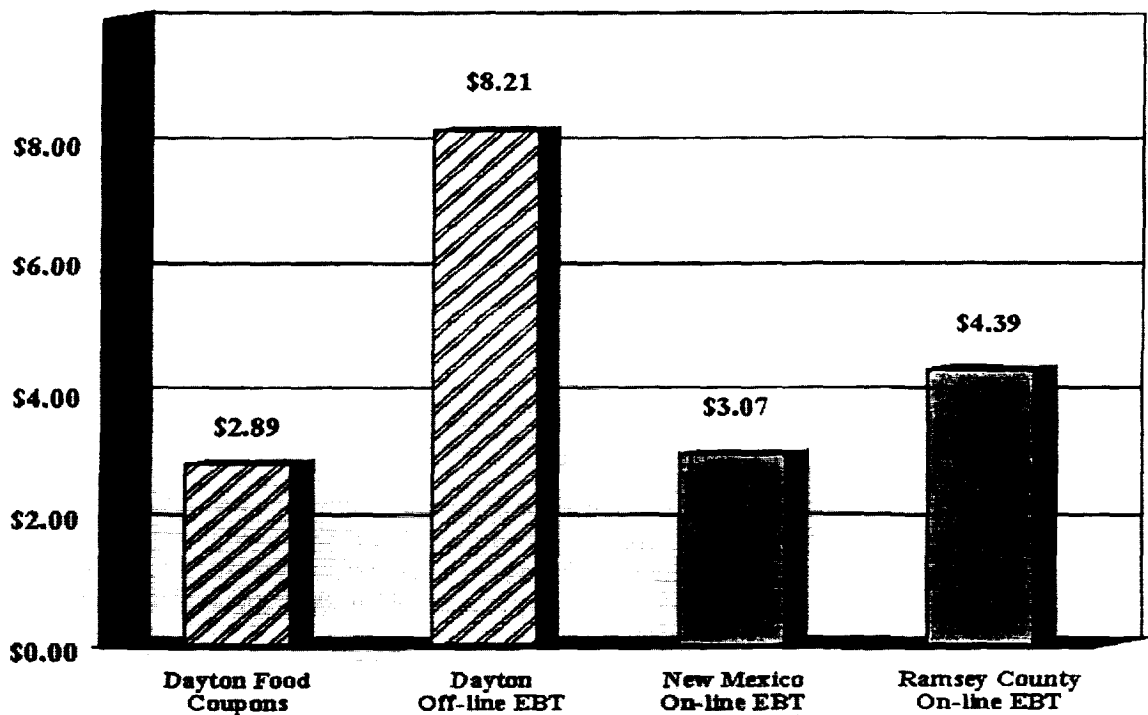


Exhibit 2 compares the administrative costs of the off-line system with the state-initiated, on-line systems in Ramsey County, Minnesota and Bernalillo County, New Mexico. The total administrative cost per case month in New Mexico and Ramsey

County at \$3.07 and \$4.39 respectively, was approximately one-third to one-half the \$8.21 cost per case month for the off-line EBT system in Montgomery County. This is not surprising given that the off-line system is still, in many ways, experimental. In addition, the two state-initiated, on-line systems deliver multiple program benefits and are integrated with the existing commercial infrastructure, thus resulting in greater economies of scope.

The higher cost of off-line versus on-line EBT results from:

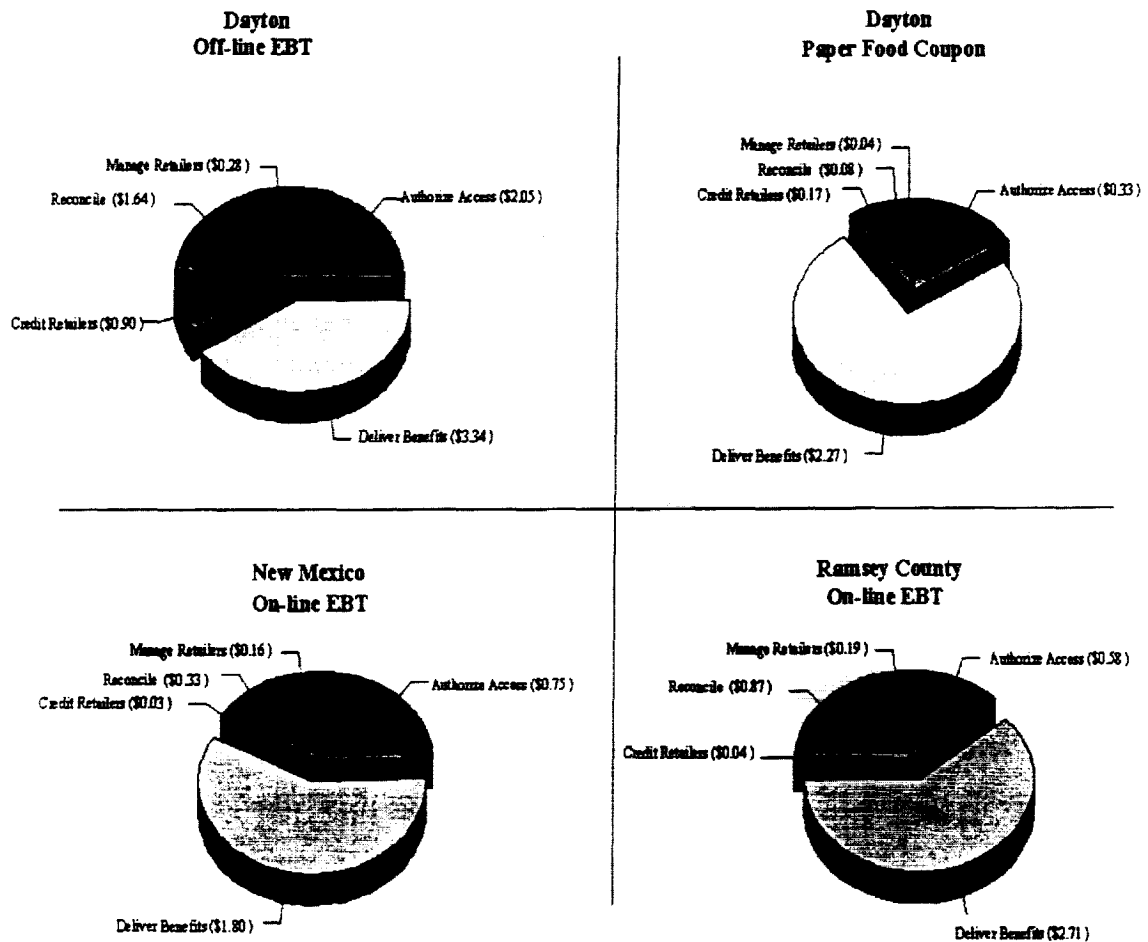
- ✓ **Card Costs.** The smart card used for off-line EBT is much more expensive than the magnetic-stripe card used in on-line EBT. The TB100 smart cards initially purchased for the off-line demonstration had a unit cost of \$9.50 compared to an average unit cost of about \$0.25 for magnetic stripe cards.
- ✓ **Account Reconciliation.** Because the recipient's account balance is carried on the card, an off-line system requires daily reconciling between card balances and the host mirror database of recipient account balances.
- ✓ **Single Program System.** The Montgomery County off-line system delivers only food stamp benefits, while the New Mexico and Ramsey County on-line systems deliver benefits for food stamps and cash benefit programs. Thus, card and operational costs in the two on-line systems are shared among multiple programs, whereas the card and operational costs of the Montgomery County off-line system are apportioned over caseloads only for the Food Stamp Program.
- ✓ **Telecommunications Costs.** Telecommunication costs, at \$0.48 per case month, were not inconsequential. While about half the \$0.95 cost per case month in Ramsey County, telecommunications costs for the off-line EBT system were not as low as expected. In New Mexico the telecommunications costs are folded into the transaction fee and are not readily apparent.

A comparison of costs for paper food coupons, Dayton off-line, and the on-line system is depicted in Exhibit 3. A discussion of the distribution of costs within each system provides an insight into how each type of system impacts costs. The difference in the distribution of costs between the off-line system and the on-line systems is indicative of the procedural and system-generated differences between on-line and off-line systems. Note that in the off-line system, costs are more evenly distributed between all functions except managing retailers than in either of the two on-line systems or the paper system. This distribution is a result of the functional differences between off- and on-line systems. For example, in the on-line system, crediting retailers is a passive

activity. Settlement is initiated by the processor at a pre-set cut-off time that does not require any additional communications from the retailer to the host. In the off-line system, crediting retailers requires that the retailer establish a communications link to the host and upload the day's transaction activity. Therefore, the

Exhibit 3

In the off-line system, costs are more evenly distributed between all functions as a result of the use of the card as the portable benefit database



higher proportion of costs for crediting retailers in the off-line system (10.8 percent) versus the on-line systems (1.1 percent) is caused by the incremental communications costs associated with related settlement activities. On the other hand, delivering benefits in an on-line system requires that a communications link be established between the retailer terminal and the host to authorize each transaction. The same function in the off-line system is performed without an outside telecommunications link, thus resulting in a lower proportionate share of total costs (40.1 percent

for off-line, 60.5 percent for on-line). Similarly, reconciliation in the off-line system requires a greater proportion of expense than in an on-line system. This expense is due in part to the additional reconciliation required between the card balances and the host balances and to retailer out-of-balance conditions that occurred during the demonstration period.

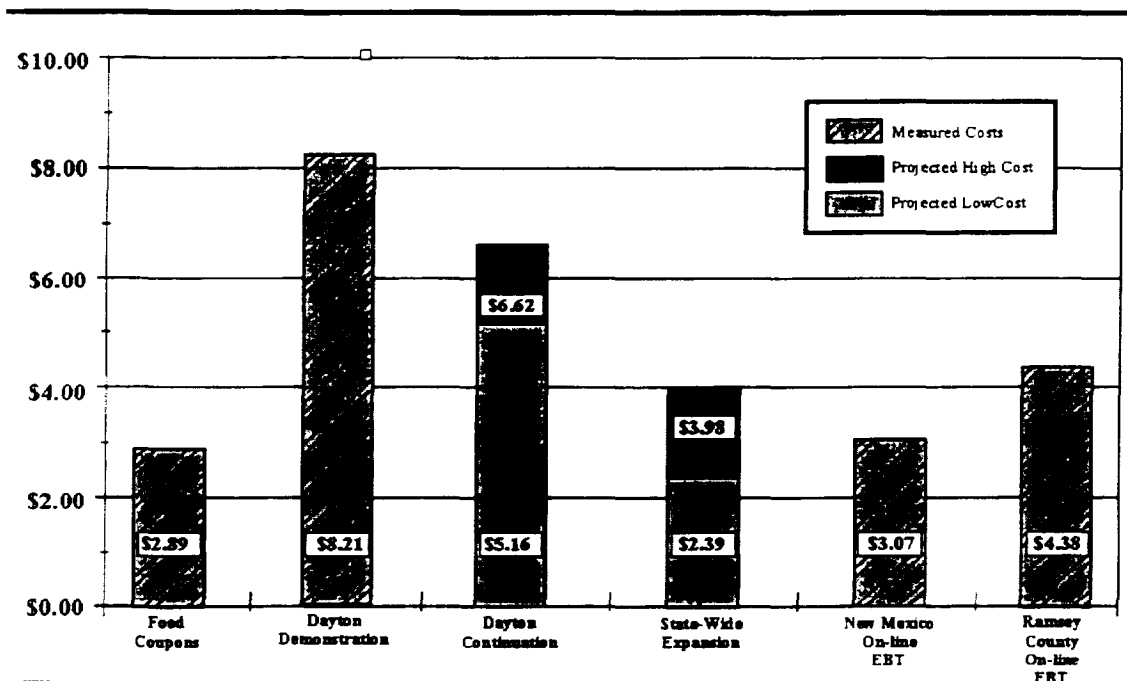
Of the total operational cost of \$8.21 per case month, 73.3 percent or \$6.02 of the cost is incurred through demonstration contractor operations. These costs were billed to FNS as the sponsor of the demonstration. Montgomery County also incurred a significant proportion of the total costs (18.8 percent), primarily because the county established a separate EBT office which required full time staff. State costs (4.8 percent) can be attributed to the operation of the eligibility system interface and to management and reporting. The remainder of the cost was incurred by FNS regional, field, and headquarters operations for monitoring, management, and reconciliation activities.

There is Potential for the Cost Effectiveness of the Off-line EBT System to be Greatly Improved

Based on continuation of the operational efficiencies implemented early this year, e.g., new cards and retailer terminals, the cost of continued operations could be reduced to between \$5.22 and

Exhibit 4

The administrative costs of the off-line EBT system could be greatly reduced



\$6.69 per case month. This cost is still higher than the \$2.89 per case month cost of the coupon system, but is 19 to 36 percent

lower than the demonstration cost of \$8.21. However, the expansion to state-wide operations would result in further economies of scale. The total number of households would increase to over 532,000, and retailers to 7,508. Of this number, 6,119 would be equipped as single-lane retailers. The rest would require 5,381 lanes to be equipped. Cost per case month would decrease to somewhere between \$2.39 and \$3.98, which brackets the coupon cost of \$2.89. Including the costs of amortizing design and development, operations, retailer installation and a 20 percent contingency lowers the range to \$2.54, which is still less than the coupon cost of \$2.89, and a high estimate of \$4.13.

Adding Aid to Families with Dependent Children (AFDC) to a state-wide system reduces the costs of cards and terminals for the Food Stamp Program by about \$0.32 per case month depending on the proportion of recipients that participate in both programs and the relative numbers of food stamp transactions per month. Information was not collected to project the extent to which AFDC costs will increase under EBT.

Design, Development, and Implementation Costs for the Off-line EBT System were \$3.4 Million

The design, development and implementation of the Off-line EBT system was a pioneering effort, as this was the first EBT system to use smart card technology. Design, development, and implementation costs for the off-line system were \$3.4 million compared to costs for New Mexico and Ramsey County of \$1.6 million and \$2.1 million, respectively. The \$3.4 million cost is based on billed costs from the system vendor. Of interest to states and other organizations considering off-line technology is the total value of resources expended. These total costs are referred to as resource costs and include both billed and unbilled resources used in the design, development, and implementation of the off-line system. The difference between billed and total resource costs relates to uncompensated overtime for system vendor personnel. Based on billed rates, the value of uncompensated overtime is \$0.2 million reflecting 3.3 man years.

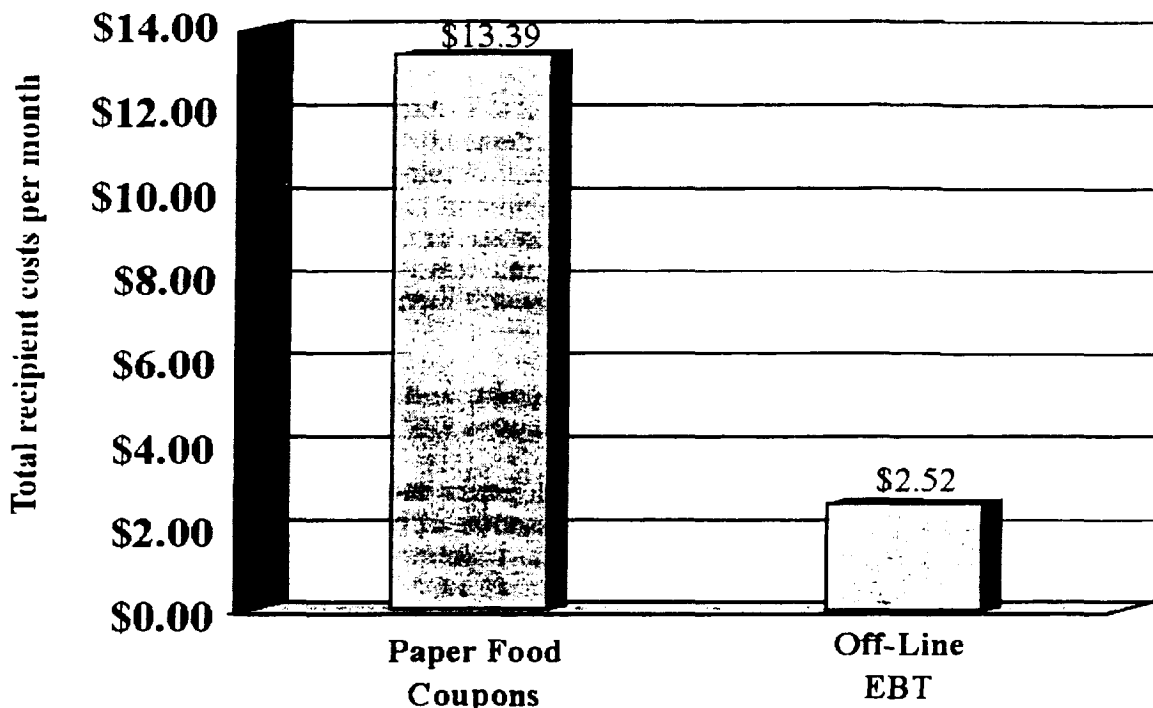
EBT is Preferred by Food Stamp Recipients

EBT significantly reduces recipient costs of participation. Coupon recipients were required to travel to one of the three available issuance sites. In addition to transportation expenses, many recipients also incurred child care expenses and lost wages for time away from work. With EBT, recipients could obtain benefits at any one of three selected food stores in their own neighborhoods and then shop at any authorized retailer in the project area. Recipient costs declined from \$13.39 to \$2.52 per case month under EBT, a reduction of \$10.87 or 81.2 percent.

Recipients' perceptions about EBT were generally positive. The method of payment (food coupons versus EBT) did not appreciably change recipients' perceptions of their treatment by store employees. With food coupons, 86 percent of recipients felt

Exhibit 5

Recipient participation costs decrease dramatically with off-line EBT



they were treated the same as other customers, while 84 percent expressed this same sentiment under EBT. Seventy percent of the recipients felt that it was easier to determine the value of remaining benefits using EBT. Seventy-two percent of the recipients said that food coupons are stolen more than the EBT card, and 61 percent said that food coupons are lost more often than the card.

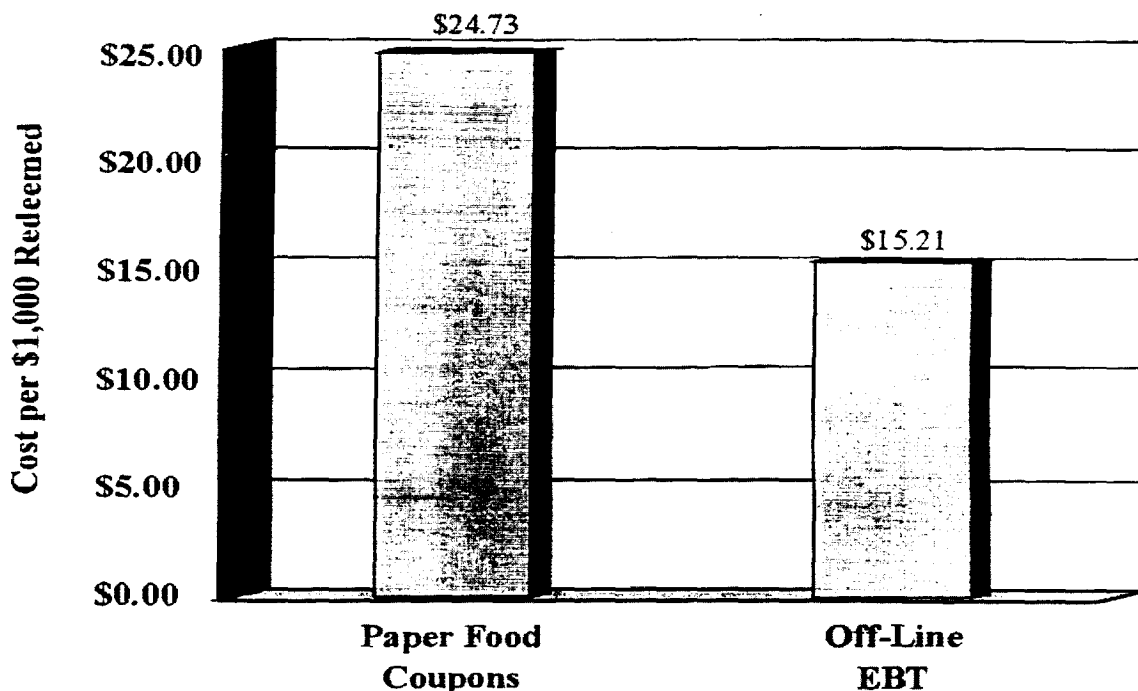
Overall, by a margin of 64 percent to 26 percent, recipients who had experienced both the coupon and EBT systems preferred the EBT system. This is lower than preference ratios measured for on-line systems: 9-to-1 in New Mexico and 8-to-2 in Ramsey County.

EBT Reduces Food Retailers' Cost of Participation

Retailer costs to participate in the Food Stamp Program under EBT were compared to the cost to participate under the food coupon system. The costs identified included: checkout productivity, handling and reconciliation, accounting errors, reshelving, and employee training. Overall participation costs for retailers

Exhibit 6

Retailer participation costs decrease dramatically with off-line EBT



decreased from \$24.73 per \$1,000 redeemed under the coupon system to \$15.21 per \$1,000 redeemed under off-line EBT, a decline of 38 percent or \$9.52.

EBT Reduces Financial Institution Participation Cost

Montgomery County local banks reported costs of \$3.50 per \$1,000 of food coupons redeemed. The relatively high cost of food coupon processing reflects its labor-intensive nature. In an EBT environment, a concentrator bank receives an electronic file

Exhibit 7

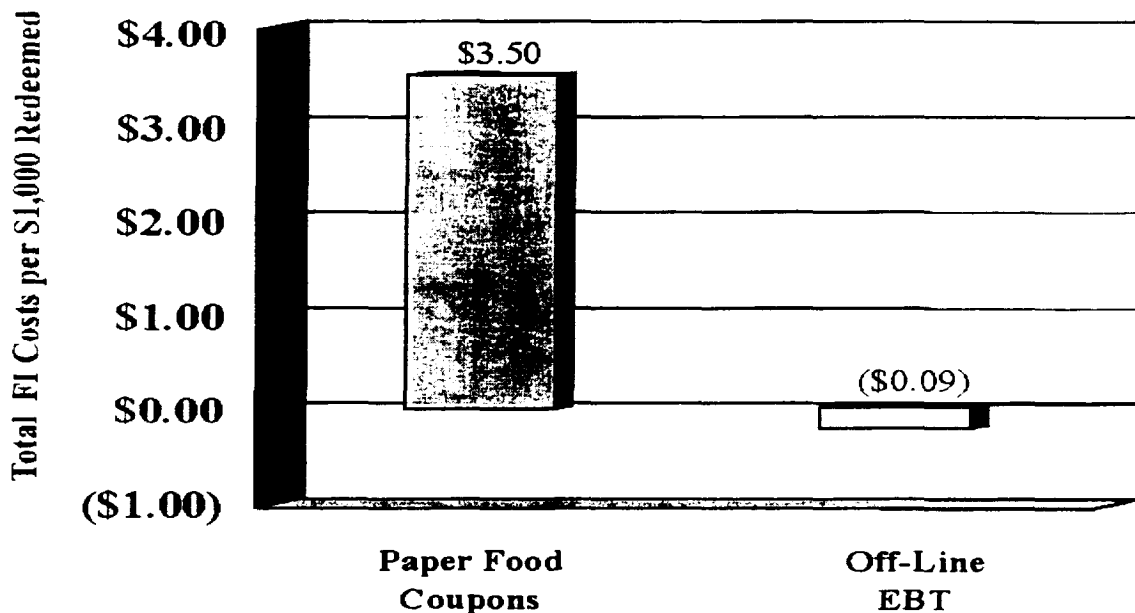
Financial Institution Net Cost/(Profit) on EBT Settlement

Cost Element	Dayton Off-line EBT	New Mexico On-line EBT	Ramsey County On-line EBT
Retailer Bank Cost	\$0.03	\$0.14	\$0.12
Retailer Bank Reimbursement	0.12	0.02	0.08
Retailer Bank Net Cost/(Profit)	(0.09)	0.12	0.04
Concentrator Bank Cost	0.09	0.12	0.21
Concentrator Bank Reimbursement	0.23	0.14	0.37
Concentrator Bank Net Cost/(Profit)	(\$0.14)	(\$0.02)	(\$0.15)

containing retailer credits from the EBT processor. Generally, the concentrator bank credits retailers for these transactions through the automated clearing house (ACH). Banks may charge the retailers fees for electronic deposits, although not all banks do so.

Exhibit 8

Financial Institution participation costs decrease with off-line EBT



Two of the banks used by Montgomery County retailers received fees for settlement services resulting in a net profit for all banks. The banks realized a net profit of \$0.09 per \$1,000 redeemed.

In New Mexico and Ramsey County, retailers' banks recoup some but not all of their costs. The net cost to retailers' banks in New Mexico is \$0.12 per \$1,000 in food stamp benefits redeemed and \$0.04 per \$1,000 redeemed for retailers' banks in Ramsey County. However, on average, retailers' banks saved more in the on-line demonstrations — \$4.38 per \$1,000 redeemed.

Off-line EBT Reduces Benefit Loss and Diversion

EBT reduces benefit loss and diversion. Benefit loss and diversion has three components: program loss, participant loss, and benefit diversion. Program loss occurs when benefits reported by recipients as lost or stolen from the mail are replaced at program cost, and when duplicate issuances to recipients are not recovered. Participant loss occurs when participants have benefits that are lost or stolen and not reimbursed by the program. Benefit diversion occurs when food stamp benefits are not used for their intended purpose, but used instead to purchase non-food items or to obtain cash. Analogous to participant losses, benefit diversions have no impact on program costs.

Exhibit 9**Benefit Loss and Diversion**

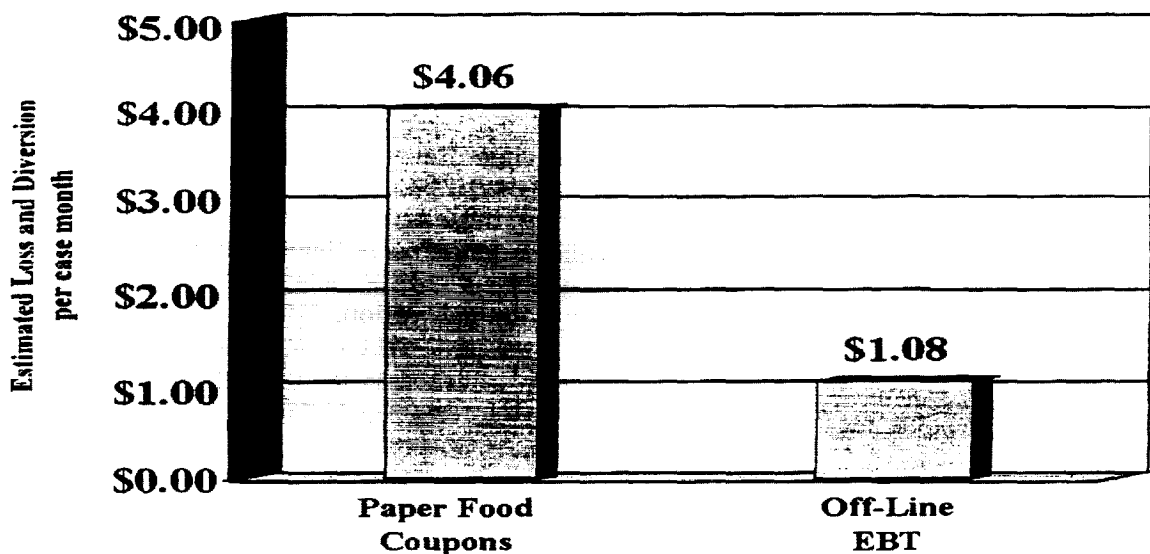
Loss	Dayton Food Coupons	Dayton Off-line EBT	New Mexico On-line EBT	Ramsey County On-line EBT
Program Loss ^a	0.01%	0.03%	0.04%	0.05%
Participant Loss ^a	1.32	0.17	0.19	0.19
Benefit Diversion ^a	0.79	0.37	0.37	0.37
Total Percent of Benefits Issued ^b	2.12%	0.57%	0.60%	0.61%
Total Monthly Cost	\$35,839	\$9,529	\$22,853	\$18,187
Cost per Case Month	\$4.06	\$1.08	\$1.09	\$1.01

^a Represents percent of total benefits issued

^b Excludes amounts recovered by participants

As shown in Exhibit 9, off-line EBT benefit loss and diversion was \$1.08 per case month compared to \$4.06 for the food coupon system in Montgomery County. These estimates compare favorably with the on-line EBT systems in New Mexico and Ramsey County, where the benefit loss and diversion estimates were \$1.09 and \$1.01, respectively.

The reduction in benefit loss and diversion is primarily due to reduced participant loss and reduced benefit diversions. The reduction in participant losses results from the differences in the

Exhibit 10**The off-line EBT system significantly reduces program loss and diversion**

benefit instruments. Recipients reported that food coupons are much easier to lose or steal than the EBT card. The EBT card requires that the user key the secret personal identification number selected by the recipient. The reduction in benefit diversion also results from differences in the benefit instrument. Retailers and recipients reported that it is much more difficult to convert electronic benefits to cash than it is to convert food coupons to cash. Coupons can routinely be sold on the street at a discount of 50 to 75 percent of their face value.

SUMMARY

Off-line Technology is Technically Viable

The demonstration system showed that off-line technology is technically viable. The measure of technical viability is the system's ability to authorize and deliver benefits accurately. Authorization and delivery of benefits was accomplished effectively in the off-line system. Benefits were accurately allotted to recipients and recipients had little trouble understanding that their benefit allotment would be available on the scheduled date at any of the three retailers they selected.

Transactions at the point-of-sale were equally effective. At the beginning of the demonstration, excessive response times resulted in negative feedback from both retailers and recipients. However, software and hardware modifications improved response time to a more acceptable level.

The off-line system does not rely on a central host computer for transaction authorization, nor does it rely on on-line telecommunications for each transaction. Therefore, system "down time" is usually the result of a faulty terminal, a faulty card or a faulty store controller. Only in the latter instance is the entire store "down".

One challenge for off-line systems is to improve the reliability of the benefit access device (the card). The original cards issued during the demonstration had a failure rate of over 30 percent, of which slightly more than 50 percent were the result of manufacturer defects. Card failures serve to decrease the average life of all cards, with implications for cost and service. The second generation of cards seems to be more durable, though only limited data are available. If off-line technology is to continue to be a viable alternative to on-line systems, the reliability of the benefit access device must be improved.

Off-line Technology Has Both Advantages and Disadvantages Compared to On-Line

An advantage of the off-line system compared to the on-line system is improved system availability.

On-line systems are susceptible to system-wide outages caused by a disruption of telecommunications or a host failure. Given that transaction authorization in an off-line system occurs between the card and the POS device, off-line systems are less susceptible to system-wide failures. However, smart card failure rates are greater than magnetic-stripe card failures. The cards initially used for the off-line demonstration experienced a failure rate of over 30 percent. A second generation of cards is now being used and is experiencing failure rates of over 10 percent.

Card security is greater with smart cards.

There is a growing concern within the card services industry about card security. Magnetic-stripe cards are more susceptible to counterfeiting. In addition, an off-line transaction cannot be completed without the original card and PIN. On the other hand, on-line systems can put an immediate lock out on cards, but the off-line systems must wait until a negative file is downloaded to each participating retailer.

The primary disadvantages of the off-line system are the high cost of cards, the lack of an applicable standard that would allow multiple card and card reader/writer manufacturers to participate without significant software modifications, the previously mentioned high failure rate of the card, and the limited compatibility of the system with the commercial debit card and credit card infrastructure.

The POS infrastructure in the United States is based on an on-line system architecture. The results of the New Mexico evaluation indicate that substantial economies may result from piggybacking on the existing commercial POS infrastructure. Thus, in those areas where there is a prevailing on-line infrastructure, there is a strong argument for piggybacking. On the other hand the banking industry is investigating off-line



**Summary of "The Impacts of the Off-Line Electronic Benefits Transfer
Demonstration," Volume I - "Impacts on Administrative Costs"**

For more than a decade, the Food and Nutrition Service (FNS) has been investigating electronic benefit transfer (EBT) as a mechanism to enhance the delivery of food stamp benefits. Previous efforts have emphasized on-line technology. Recognizing that smart cards might be a feasible alternative, FNS contracted, in 1990, with the National Processing Company (NPC), the State of Ohio and Montgomery County to design, develop, implement and operate an off-line EBT system. In contrast to on-line systems, an off-line system maintains the primary account on an integrated circuit (IC) or smart card. Each transaction is authorized and the card balance adjusted without communicating with a central computer.

The objectives of the demonstration were to determine the technological feasibility of off-line EBT; whether it would be accepted by stakeholder groups; and whether it would be cost-effective. The evaluation is organized in three volumes. The first volume examines administrative costs of designing, developing, implementing and operating the pilot and makes projections for operational costs for other design and implementation scenarios. Stakeholder impacts are presented in volume II. Volume III addresses technical aspects of the demonstration.

Findings - Volume I: Impacts on Administrative Costs

Off-line EBT administrative costs in the Dayton pilot area were more than 2.5 times larger than coupon costs and more than twice as large as the average costs in the Ramsey County and New Mexico on-line systems. The per-case-month operating cost for issuing benefits electronically in the Dayton off-line system was \$8.21 during the evaluation period (August-December 1992). This compares to per-case-month costs of \$4.39 in the Ramsey County and \$3.07 in the New Mexico on-line systems. The higher costs of the Dayton system are not surprising given the small scale of the pilot.

The costs to design, develop, and implement the off-line EBT system were \$3.4 million. This amount compares to design, development and implementation costs for on-line systems of \$1.6 million in New Mexico and \$2.1 million in Ramsey County. Costs were higher, in part, due to the pioneering nature of the system.

As with on-line EBT, benefit losses and diversions were cut to one-fourth previous levels under the off-line EBT system. As a percent of benefits issued, benefit loss and diversion accounted for 2.12 percent of benefits issued as coupons as compared to .57 percent of benefits issued through the off-line EBT system. This compares to an average of .6 percent of benefits issued under the Ramsey County and New Mexico on-line systems. Off-line

recipients reported by a 3-to-1 margin that it is harder to sell benefits by cash with the EBT card and 69 percent of retailers perceived food stamp fraud to be decreased under EBT.

Assuming that card replacements can be reduced, an off-line EBT system can potentially be cost effective when implemented statewide. For on-line systems costs of subsequent on-line systems were substantially less than those of the initial Reading pilot. Similarly, cost economies associated with a larger client and program base could result in per-case-month operating costs in the \$2.44 to \$4.09 range for a statewide, off-line EBT system integrating food stamps and the AFDC program.

Findings - Volume II: Impacts on Recipients, Retailers and Financial Institutions

Recipients, retailers and financial institutions prefer the off-line EBT system to coupons for reasons similar to those given by on-line participants. From the perspective of system stakeholders, on-line and off-line EBT systems appear to function in virtually the same way. By a 3-1 margin, recipients preferred the off-line system to coupons. This margin is somewhat less than that observed in on-line demonstrations. Retailers noted advantages of the system in reducing paperwork and handling time. As with on-line, banks uniformly reported a favorable opinion of EBT.

Costs of participation were reduced for all program participants. Recipient costs declined when EBT was implemented from \$13.39 per case month to \$2.52 per case month an 81 percent decrease. Retailer costs fell 38 percent from \$24.73 per \$1000 redeemed to \$15.21. Financial institution costs went from a \$3.50 cost per \$1000 redeemed under the paper system to a net profit of \$0.23 per \$1000 of EBT benefits redeemed.

Findings - Volume III: System Design, Development, and Implementation

The project was implemented smoothly and technical feasibility of off-line was established. A core project team from the vendor, state and local offices cooperated in the project the pre-award proposal phase through project implementation. Some difficulties might have been avoided if state level staff had been specifically assigned to the project. Overall, the team functioned effectively to identify and address the technical issues as they arose.

Problems with the retailer community were avoided. Retailers were brought into the process in the pre-award stage and two retailer groups were formed to address retailer policy issues and to provide feedback to the project team about detailed system operating procedures.

The level of card replacements exceeded expectations. Card failure rates were unacceptably high. During the operational phase, the vendor required the card supplier to provide cards from a more reliable manufacturing site. Replacement of lost and stolen cards also exceeded expectations. FNS approved a waiver that allowed the project team to implement a 10 day waiting period for households requiring multiple card replacements.

Telecommunications costs were not inconsequential. Steps were taken during the operations phase to reduce telecommunications costs by eliminating on-line access to the system for the

county office and by sending partial downloads to retailers during settlement. Reducing telecommunication costs of retailer downloads will pose a challenge to statewide implementation.